

WHAT IS CLAIMED IS:

1. A purified or isolated polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 1 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 1: 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450.
2. A purified or isolated polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 4 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 4: 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579.
3. A purified or isolated nucleic acid comprising a nucleotide sequence selected from the group of SEQ ID Nos. 5-28, a sequence complementary thereto or a fragment or a variant thereof.
4. A purified or isolated nucleic acid comprising a combination of at least two polynucleotides selected from the group consisting of SEQ ID Nos. 5-28, wherein the polynucleotides are arranged within the nucleic acid, from the 5' end to the 3' end of said nucleic acid, in the same order than in SEQ ID No. 1.
5. An oligonucleotide of at least 8 nucleotides in length that hybridizes under stringent hybridization conditions with a nucleic acid selected from the group consisting of the nucleotide sequences 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450 of SEQ ID No. 1 or a sequence complementary thereto.
6. An oligonucleotide of at least 8 nucleotides in length that hybridizes under stringent hybridization conditions with a nucleic acid selected from the group consisting of the nucleotide sequences 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579 of SEQ ID No. 4 or a sequence complementary thereto.
7. An isolated, purified, or recombinant polynucleotide consisting essentially of a contiguous span of 8 to 50 nucleotides of any one of SEQ ID Nos. 1 and 4 and the complement thereof, wherein said span includes a biallelic marker of *RBP-7*.

8. A polynucleotide according to claim 7, wherein said biallelic marker of *RBP-7* is selected from the group consisting of A1 to A21, and the complements thereof.

9. A polynucleotide according to claim 7, wherein said contiguous span is 18 to 47 nucleotides in length and said biallelic marker is within 4 nucleotides of the center of said polynucleotide.

10. A polynucleotide according to claim 9, wherein said polynucleotide consists of said contiguous span and said contiguous span is 25 nucleotides in length and said biallelic marker is at the center of said polynucleotide.

11. A polynucleotide according to claim 9, wherein said polynucleotide consists essentially of a sequence selected from the sequences SEQ ID Nos. 30-71 and the complementary sequences thereto.

12. A polynucleotide according to claim 7, wherein the 3' end of said contiguous span is located at the 3' end of said polynucleotide and said biallelic marker is present at the 3' end of said polynucleotide.

13. An isolated, purified, or recombinant polynucleotide consisting essentially of a contiguous span of 8 to 50 nucleotides of any one of SEQ ID Nos. 1 and 4 and the complement thereof, wherein the 3' end of said contiguous span is located at the 3' end of said polynucleotide, and wherein the 3' end of said polynucleotide is located within 20 nucleotides upstream of a biallelic marker of *RBP-7* in said sequence.

14. A polynucleotide according to claim 13, wherein the 3' end of said polynucleotide is located 1 nucleotide upstream of said biallelic marker of *RBP-7* in said sequence.

15. A polynucleotide according to claim 14, wherein said polynucleotide consists essentially of a sequence selected from the sequences of SEQ ID Nos. 102-136.

16. An isolated, purified, or recombinant polynucleotide consisting essentially of a sequence selected from the sequences of SEQ ID Nos. 72-101.

17. An isolated, purified, or recombinant polynucleotide which encodes a polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29.

18. An isolated, purified, or recombinant polynucleotide for use in hybridization assays, sequencing assays, and enzyme-based mismatch detection assays for determining the identity of the nucleotide at a biallelic marker of *RBP-7*.

19. A solid support having a polynucleotide attached thereto, wherein said polynucleotide is selected from the group consisting of:

- a) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 1 or the complements thereof, wherein said contiguous span comprises at

least 1 of the following nucleotide positions of SEQ ID No. 1: 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450;

b) a polynucleotides comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 4 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 4: 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579;

c) a polynucleotide consisting essentially of a contiguous span of 8 to 50 nucleotides of any one of SEQ ID Nos. 1 and 4 and the complement thereof, wherein said span includes a biallelic marker of *RBP-7*;

d) a polynucleotide consisting essentially of a contiguous span of 8 to 50 nucleotides of any one of SEQ ID Nos. 1 and 4 and the complement thereof, wherein the 3' end of said contiguous span is located at the 3' end of said polynucleotide, and wherein the 3' end of said polynucleotide is located within 20 nucleotides upstream of a biallelic marker of *RBP-7* in said sequence;

e) a polynucleotide consisting essentially of a sequence selected from the sequences of SEQ ID Nos. 72-101;

f) a polynucleotide which encodes a polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29; and

g) a polynucleotide for use in hybridization assays, sequencing assays, and enzyme-based mismatch detection assays for determining the identity of the nucleotide at a biallelic marker of *RBP-7*.

20. An array of polynucleotides comprising at least one polynucleotide according to claim 19.

21. An array according to claim 20, wherein said array is addressable.

22. A polynucleotide having a label thereon, wherein said polynucleotide is selected from the group consisting of:

a) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 1 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 1: 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-

87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450;

b) a polynucleotides comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 4 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 4: 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579;

c) a polynucleotide consisting essentially of a contiguous span of 8 to 50 nucleotides of any one of SEQ ID Nos. 1 and 4 and the complement thereof, wherein said span includes a biallelic marker of *RBP-7*;

d) a polynucleotide consisting essentially of a contiguous span of 8 to 50 nucleotides of any one of SEQ ID Nos. 1 and 4 and the complement thereof, wherein the 3' end of said contiguous span is located at the 3' end of said polynucleotide, and wherein the 3' end of said polynucleotide is located within 20 nucleotides upstream of a biallelic marker of *RBP-7* in said sequence;

e) a polynucleotide consisting essentially of a sequence selected from the sequences of SEQ ID Nos. 72-101;

f) a polynucleotide which encodes a polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29; and

g) a polynucleotide for use in hybridization assays, sequencing assays, and enzyme-based mismatch detection assays for determining the identity of the nucleotide at a biallelic marker of *RBP-7*.

23. A recombinant vector comprising a polynucleotide selected from the group consisting of:

a) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 1 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 1: 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450;

b) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 4 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 4: 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579;

c) a polynucleotide having a sequence selected from the group of SEQ ID Nos. 5-28, a sequence complementary thereto or a fragment or a variant thereof;

d) a polynucleotide comprising a combination of at least two polynucleotides selected from the group consisting of SEQ ID Nos. 5-28, wherein the polynucleotides are arranged within the nucleic acid, from the 5' end to the 3' end of said nucleic acid, in the same order than in SEQ ID No. 1; and

e) a polynucleotide which encodes a polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29.

24. A host cell comprising a recombinant vector according to claim 23.

25. A non-human host animal or mammal comprising a recombinant vector according to claim 23.

26. A mammalian host cell comprising a *RBP-7* gene disrupted by homologous recombination with a knock out vector, comprising a polynucleotide selected from the group consisting of:

a) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 1 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 1: 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450;

b) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 4 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 4: 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579;

c) a polynucleotide having a sequence selected from the group of SEQ ID Nos. 5-28, a sequence complementary thereto or a fragment or a variant thereof;

d) a polynucleotide comprising a combination of at least two polynucleotides selected from the group consisting of SEQ ID Nos. 5-28, wherein the polynucleotides

are arranged within the nucleic acid, from the 5' end to the 3' end of said nucleic acid, in the same order than in SEQ ID No. 1; and

e) a polynucleotide which encodes a polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29.

27. A non-human host mammal comprising a *RBP-7* gene disrupted by homologous recombination with a knock out vector, comprising a polynucleotide selected from the group consisting of:

a) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 1 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 1: 1-481, 666-1465, 1521-67592, 67704-71118, 71185-72598, 72690-75543, 75624-81841, 81934-83019, 83406-87901, 88041-93856, 93937-97158, 97236-98962, 99086-103188, 103745-104303, 104654-105084, 105180-106682, 106781-107798, 107897-108392, 108552-114335, 114418-114491, 114594-132246, 132332-134150, 134350-145565, 145842-146332, 146775-150446, 150542-152959, 153176-155590, 155738-159701, 160466-161028, and 161453-162450;

b) a polynucleotide comprising a contiguous span of at least 12 nucleotides of SEQ ID No. 4 or the complements thereof, wherein said contiguous span comprises at least 1 of the following nucleotide positions of SEQ ID No. 4: 1-208, 1307-1350, 1703-1865, 2107-2180, 2843-3333, 3871-3882, 4222-4276, and 5017-5579;

c) a polynucleotide having a sequence selected from the group of SEQ ID Nos. 5-28, a sequence complementary thereto or a fragment or a variant thereof;

d) a polynucleotide comprising a combination of at least two polynucleotides selected from the group consisting of SEQ ID Nos. 5-28, wherein the polynucleotides are arranged within the nucleic acid, from the 5' end to the 3' end of said nucleic acid, in the same order than in SEQ ID No. 1; and

e) a polynucleotide which encodes a polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29.

28. An isolated, purified, or recombinant polypeptide comprising a contiguous span of at least 6 amino acids of SEQ ID No. 29.

29. An isolated or purified antibody composition capable of selectively binding to an epitope-containing fragment of a polypeptide according to claim 28.